

TIKHONOV, V.N.; GRANKINA, M.Ya.; KOROLEVA, V.I.

Complexometric determination of magnesium and calcium in the products of the titanium industry. Zhur. anal. khim. 19 no. 1:59-62 '64. (MIRA 17:5)

1. Bereznikovskiy filial Vsesoyuznogo nauchno-issledovatel'skogo alyuminiyevo-magniyevogo instituta.

GRANKINA, Valentina Ivanovna

[Ways of reducing the cost of cocoons] Pilla tannarkhini  
kamatirish iullari. Toshkent, Uzbekiston SSSR davlat  
nashrieti, 1962. 46 p. [In Uzbek] (MIRA 17:10)

GRAN'KO, N.; SHANTYR', O.; SHNEY-KRASIKOVA, Ye.; BRUNEVSKAYA, M., red.;  
STEPANOVA, N., tekhn.red.

[Machine-embroidery manual] Posobie po mashinnoi vyshivke.  
Minsk, Gos.izd-vo BSSR, Red.nauchno-tekhn.lit-ry, 1960. 160 p.  
(MIRA 14:3)  
(Embroidery (Machine))

GRAN'KOV, A.

Universal side mirror. Voen.znan. 33 no.9:26 S '57. (MIRA 10:10)

1. Rukovoditel' strelkovogo kruzhka pri pervichnoy organizatsii  
Dobrovol'nogo obshchestva sodeystviya armii, aviatsii i flotu shkoly  
No. 22 g. Dneprodzershinska.  
(Shooting)

GOROKHOV, I., inzh. (Zhdanov); GRANKOV, L., inzh. (Zhdanov); RAKHMANOV, N.,  
inzh.-mayor, izobretatel'; BASKAKOV, Yu. (Chernogorsk); PERFIL'YEV,  
N. (Moskva); GLINCHEVSKIY, V. (Penza); KORNEV, M., inzh. (Kiyev);  
MIKHAREV, P., konstruktor (Orenburg\*); D'YACHKOV, M. (Irkutsk)

How interesting! Izobr.i rats. no.1:19 '63.

(MIRA 16:3)

1. Nachal'nik Penzenskogo byuro po delam ratsionalizatsii  
i izobretatel'stva (for Glinchevskiy).  
(Technological innovations)

VOLKOV, I.; GRANKOV, L., inzh.

Use of synthetic materials and plastics in ship repair. Mor. flot  
24 no.9:31-32 S '64. (MIRA 18:5)

1. Rukovoditel' gruppy Gosudarstvennogo proyektno-konstruktorskogo i  
nauchno-issledovatel'skogo instituta morskogo transporta Ministerstva  
morskogo flota SSSR (for Volkov).

GRANKOV, L.M.

Ultrasonic thickness meter. Mashonostroitel' no.10:16-17 0 '65.  
(MIRA 18:10)

L 17785-66 EWT(d)/EWP(c)/EWP(v)/T/EWP(k)/EWP(l)/ETC(m)-6

ACC NR: AP6004655

(N)

SOURCE CODE: UR/0117/65/000/010/0016/0017

AUTHOR: Grankov, L. M.

ORG: none

TITLE: An ultrasonic thickness gauge

SOURCE: Mashinostroitel', no. 10, 1965, 16-17

TOPIC TAGS: ultrasonic equipment, electronic measuring instrument, electronic circuit, measuring instrument, pulse generator/ UZTI-62 measuring instrument

ABSTRACT: The UZTI-62 ultrasonic pulse thickness gauge is described. It was built at the Arctic and Antarctic Scientific Research Institute (Arkticheskiy i Antarkticheskiy nauchno-issledovatel'skiy institut), is designed for measuring the thickness of material, and can measure parts that can be approached from only one side. The instrument (see Fig. 1) measures according to the formula

$$t = \frac{2l}{c},$$

where  $t$  is the time interval between reflected pulses,  $l$  the thickness of the  
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UDC: 62-41.002.56



L 17785-66

ACC NR: AP6004655

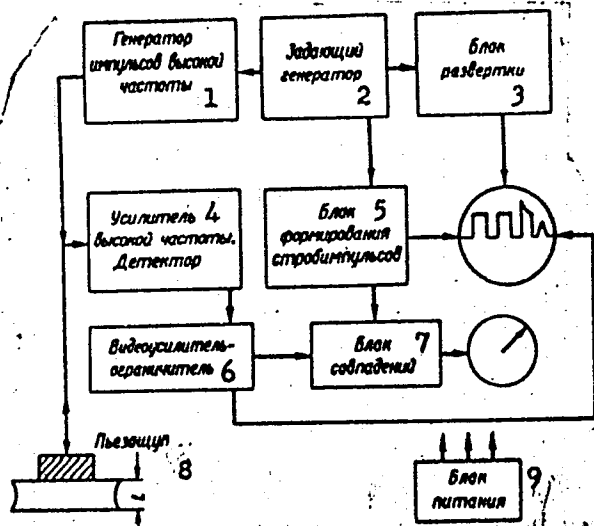


Fig. 1. 1 - high-frequency pulse generator; 2 - master oscillator; 3 - sweep unit; 4 - h-f amplifier and detector; 5 - gate-pulse shaper; 6 - video amplifier-limiter; 7 - coincidence unit; 8 - piezoprobe; 9 - power supply.

part, and  $c$  the ultrasound propagation velocity. The scale is calibrated for  
Card 2/3

L 17785-66

ACC NR: AP6004655

steel, and a conversion formula is given for other metals and ceramics. The measurement limits for steel are 5--30 and 15--60 mm; the accuracy is  $\pm 0.5$  mm for up to 10 mm and  $\pm 0.5\%$  for over 10 mm; the power is not over 100 w; the dimensions are 230 x 260 x 410 mm; the weight is 10 kg. The dimensions of the stabilizer are 140 x 160 x 370 mm, and its weight is not over 10 kg. Orig. art. has: 1 photograph, 1 diagram, and 2 formulas.

SUB CODE: 14/ SUBM DATE: none

Card 3/3 vmb

GRANKOV, Vasilii Pavlovich; SHNITSIS, Ye.M., redaktor; KAPRALOVA, A.A.,  
tekhnicheskiiy redaktor

[Selective observation] Vyborechnoe nabliudenie. Moskva, Gos.  
statisticheskoe izd-vo, 1955. 74 p. (MIRA 9:2)  
(Sampling (Statistics))

GRANKOV, VASILIIY PAVLOVICH

N/5  
611.912  
.G71

SBORNIK ZADACH PO STATISTIKE (COLLECTION OF STATISTICAL PROBLEMS, BY)  
V. P. GRANKOV (1 DR. ) POD RED. A. I. GOZULOVA. MOSKVA, GOSSTATIZDAT, 1957.  
255 P. TABLES.

GRANKOV, Vasilii Pavlovich; SOLDATOV, V.A., red.; PYATAKOVA, N.D.,  
tekh. red.

[Selective observation] Vyborochnoe nabliudenie. Izd.2.,  
perer. i dop. Moskva, Gosstatizdat, 1963. 152 p.  
(MIRA 17:2)

L 9200-66 EPF(a)-2/EWT(1)/EWT(m)/ETC/ENG(m)/EMP(t)/EMP(b)/EMA(m)-27  
 ACC NR: AR6000105 IJP(c) AT/JD SOURCE CODE: UR/0058/65/000/008/G007/G007  
 SOURCE: Ref. zh. Fizika, Abs. 8G57  
 AUTHORS: <sup>44, 55</sup>Kiselevskiy, L. I.; <sup>44, 55</sup>Snopko, V. N.; <sup>44, 55</sup>Gran'kova, D. A.; <sup>44, 55</sup>Shimanovich, V. D.  
 ORG: none  
 TITLE: Investigation of the level populations of copper and aluminum atoms subjected to autoionization  
 CITED SOURCE: Tr. Komis. po spektroskopii. AN SSSR. M., t. 2, vyp. 1, 1964, 150-158  
 TOPIC TAGS: copper, aluminum, ionization, electron recombination, line intensity, electron energy level, plasma structure  
 TRANSLATION: A study was made of the influence of the processes of autoionization and recombination on the intensity of the lines whose upper levels correspond to simultaneous excitation of two electrons. The level shifts of Cu and Al were studied. It is shown that the ratio of the intensities of the lines produced on going over from nearby levels with different autoionization coefficients is a function of the temperature, of the charged-particle concentration, and of the density. Under certain conditions such a ratio of the intensities can serve as a sensitive indicator of the physical parameters of a plasma. The obtained data are used to study the physical conditions in electric discharges and jets of a low-temperature plasma.  
 SUB CODE: 20/ SUBM DATE: none/ ORIG REF: 000/ OTH REF: 000  
 Card 1/1



L 8756-65

ACCESSION NR: AP4044843

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by the ratio of the intensities of lines with close upper energy levels, having different autoionization probability. The investigations have shown that the intensity of the lines corresponding to a transition from the level  $4p_{5/2}^0$ , which has low autoionization probability, changes with increasing pressure (taking into account the influence of the temperature) in the same manner as the intensity of lines from levels located below the ionization boundary, for which the autoionization probability is equal to zero. It is shown that the ratio of the intensity of lines subject to autoionization first increases strongly with increasing pressure, and then reaches saturation and remains constant. The pressure at which saturation is reached is different for the case of an arc from the case of a glow discharge, while in a low voltage spark at about 200 mm Hg. It can be assumed that the saturation region corresponds to the character of level population, and that the decrease in

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L 8-56-65

ACCESSION NR: AP4044843

the population of levels with large autoionization probability with decreasing pressure is connected with the decrease in the number of inelastic collisions between the atoms and the electrons and with recombination between the ions and electrons at the levels in question. This conclusion is confirmed by the fact that the deviation of autoionization levels from equilibrium population always increases with decreasing electron concentration, which is connected with decreasing temperature. The authors thank M. A. Zolotarev for his useful help in the work. Orig. art. has 5 figures and 1 table.

ABSTRACT: None

SUBMITTED: 10Nov63

ENCL: 00

SUB CODE: OP

NR REF SOV: 001

OTHER: 003

Card 3/3

L 29677-66 EWT(1) IJP(c) AT  
ACC NR: AP6012857

SOURCE CODE: UR/0368/66/004/004/0342/0345

AUTHOR: Gran'kova, D. A.; Kiselevskiy, L. I.

ORG: none

TITLE: Measurement of the electron density in an ac arc by determining the relative intensities of the transitions from the displaced levels

SOURCE: Zhurnal prikladnoy spektroskopii, v. 4, no. 4, 1966, 342-345

TOPIC TAGS: ac discharge, discharge plasma, plasma arc, electron density

ABSTRACT: This is a continuation of earlier work by one of the authors (Kiselevskiy, with V. N. Snopko, Opt. i spektr. v. 17, 637, 1964) dealing with the character of the population of the displaced copper levels  $e^4D_j$  in a dc arc. The present investigation considers the change in the population of these levels in a nonstationary plasma of an ac arc at different pressures of the surrounding atmosphere. Another purpose of the investigation was to check on the applicability of a method (also by Kiselevskiy and Snopko, ZhPS v. 2, 207, 1965) of measuring electron densities by determining the relative intensities of the transitions from displaced levels with different auto-ionization probabilities. The investigations were made with arc pulses from electrodes of a copper and zinc (10%) alloy, placed in a chamber in which the pressure could be varied from 1 atm to several

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UDC: 537.53

L 29677-66

ACC NR: AF6012857

mm Hg. The gap was 2 mm and the current 3 amp. Investigation of the arc pulses in an atmosphere of hydrogen has made it possible to compare the measured densities against the half-width of the H $\beta$  line. The results obtained by two methods turned out to be quite close in the case of reduced pressure (300 mm Hg). Plots are presented of the electron density vs. the time, of the relative intensity of lines with different auto-ionization probabilities, the electron density, and the relative intensities of the lines of the ion and the neutral atom, as well as the discharge temperature vs. the time for both 760 and 300 mm Hg. A tendency to saturation is observed at 760 mm Hg, but not at 300 mm Hg. The degree of ionization is maximal at the initial stage of the pulse and decreases toward the end. This agrees with the data on the temperature. The variation of the degree of ionization and of the temperature during the pulse agree with the change of the transitions intensity ratio, and consequently with the variation of the electron density. It is thus concluded that the electron density and the intensity ratio are uniquely related at pressures below atmospheric, so that the method can be used to measure the electron density. Orig. art. has: 3 figures.

SUB CODE: 20/ SUBM DATE: 25Jan65/ ORIG REF: 004

Cord 2/2 CC

GRAN'KOVA, D.A.; KISELEVSKIY, L.I.

Arc type light source for spectrum analysis with permanent  
upper electrode. Zhur. prikl. spekt. 3 no. 2:168-170  
Ag '65. (MIRA 18:12)

1. Submitted April 19, 1965.

L 27511-66 EWT(m)/EWP(w)/EWA(d)/T/EWP(t)/ETT IJP(c) JD/JG/GS/JH  
ACC NR: AT6012374 SOURCE CODE: UR/0000/65/000/000/0089/0091

AUTHORS: Ageyev, N. V.; Glazunov, S. G.; Petrova, L. A.; Tarasenko, G. N.; Grankova, L. P.

ORG: none

TITLE: Investigation of alloys of the system Ti--Mo--Cr--Fe--Al

SOURCE: Soveshchaniye po metallokhimii, metallovedeniyu i primeneniyu titana i yego splavov, 6th. Novyye issledovaniya titanovykh splavov (New research on titanium alloys); trudy soveshchaniya. Moscow, Izd-vo Nauka, 1965, 89-91

TOPIC TAGS: titanium, iron, chromium, molybdenum, aluminum, titanium alloy, metal aging, annealing, hardness, x ray spectrum

ABSTRACT: The effect of annealing and aging on the hardness and x-ray spectra of alloys derived from the system Ti--Mo--Cr--Fe--Al was studied. The experimental procedure was described earlier by N. V. Ageyev, and L. A. Petrova (Dokl. AN SSSR, 1961, 138, No. 2, 359). Five different alloy compositions were studied, and the experimental results are presented graphically (see Fig. 1). Photographs of polished sections of the alloys annealed at different temperatures and aged for different periods of time are presented. The presence of satellite lines in the x-ray spectrograms are noted, but the authors refrain from giving an explanation for their presence. It is concluded that the alloys may prove interesting as low-alloy  $\beta$ -stabilizing high-strength titanium alloys.

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L 27511-66

ACC NR: AT6012374

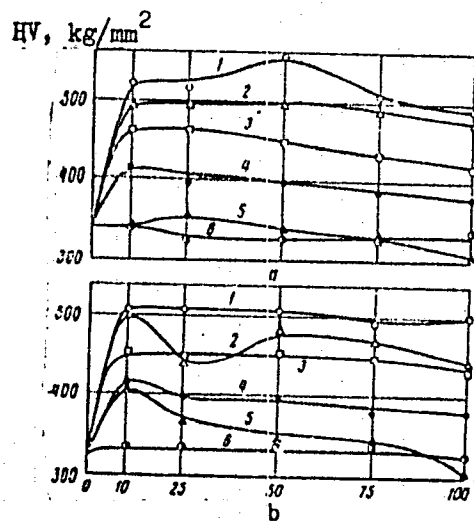


Fig. 1. Hardness of alloys as a function of the temperature and duration of aging. Aging temperature in C: 1 - 350; 2 - 400; 3 - 450; 4 - 500; 5 - 550; 6 - 600. (a) alloy 1T (2.9% Fe; 5.35 Cr; 1.47 Mo, 2.53 Al; 0.020 C; and 0.025 N); (b) alloy 5T (3.01% Fe; 7.7 Cr; 0.7 Mo; 1.2 Al; 0.016 C; and 0.021 N).

Orig. art. has: 1 table and 5 figures.

Card 2/2 *BLG* SUB CODE: 11/ SUBM DATE: 02Dec65/ ORIG REF: 004

L 50263-65 EMT(m)/ENP(w)/EWA(d)/T/ENP(t)/EPF(n)-2/ENP(b) ENP(c) JD/JG

ACCESSION NR: AP5013117

UR/0370/65/000/002/0141/0146  
669.295

AUTHOR: Agayev, H. V. (Moscow); Glazunov, S. G. (Moscow); Petrova, L. A. (Moscow);  
Izraelenko, G. N. (Moscow); Grankova, L. P. (Moscow)

TITLE: Hot hardness in 8 alloys of the Ti-Mo-Cr-Fe-Al system

SOURCE: AN SSSR. Izvestiya. Metally, no. 2, 1965, 141-146

TOPIC TAGS: titanium alloy, molybdenum alloy, chromium alloy, aluminum alloy,  
iron alloy, metal mechanical property

ABSTRACT: Hot hardness measurements on six Ti-Mo-Cr-Fe-Al alloys gave a preliminary idea of the over-all high temperature strength properties. Measurements were made at 1000°C (after holding for one minute) and at 700°C (after one minute) and at 1000°C (after one minute) were also obtained at 1000°C and 700°C under a load of 10 kg. Differences in positions of maximum hardness for the forged at 1000°C and heat treated to 700°C specimens is said to be caused by the different amounts of segregations. Alloy compositions used had somewhat varying compositions. Non heat treated (forged) alloys maintained a higher hot hardness than heat treated al-

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L 55852-65

ACCESSION NR: APS013117

loys, i.e. hardness at 600°C was about the same as room temperature. A sharp drop in hardness after 700°C. The 700°C reheat does not provide enough time for the attainment of equilibrium conditions. A truer picture of  $\delta$  precipitation would be obtained with longer annealing time under vacuum. Hardness versus time curves somewhat slight rises with increasing time due to precipitation of  $\delta$ . High temperature hardness in the 20-600°C range indicated effectual high temperature strengthening. Orig. art. has: 2 figures, 1 table.

ASSOCIATION: none

SUBMITTED: 24Feb64

NO REF SOV: 005

ENCL: 00

SUB CODE: MM

OTHER: 000



ACC NR: AP6036757

SOURCE CODE: UR/0020/66/171/001/0077/0080

AUTHOR: Ageyev, N. V. (Corresponding member AN SSSR); Ivanova, V. S.; Petrova, L. A.;  
Kudryashov, V. G.; Grankova, L. P.

ORG: Institute of Metallurgy im. A. A. Baykov, AN SSSR (Institut metallurgii  
Akademii Nauk SSSR)

TITLE: Effect of structure on the resistance of  $\beta$ -titanium alloy crack propagation

SOURCE: AN SSSR. Doklady, v. 171, no. 1, 1966, 77-80

TOPIC TAGS: titanium, molybdenum alloy, chromium containing alloy, iron containing  
alloy, aluminum containing alloy, ~~heat treatment~~, ~~alloy structure~~, ~~alloy~~  
~~mechanical property~~/IVT-1 alloy

ABSTRACT: Specimens of IVT-1  $\beta$ -titanium alloy of optimum composition (7% Mo,  
5.5% Cr, 3% Fe, and 3% Al) were solution heat treated at 800C (the  $\beta$ -region), water  
quenched, and aged at 450C for 50 hr, at 500C for 20 hr, at 525C for 15 hr, or at  
500C for 15 hr. Microscopic examination showed that decomposition of the  $\beta$ -solid  
solution became more uniform as the aging temperature increased. After aging at  
525C for 15 hr, the alloy structure consisted of the  $\beta$ -solid solution matrix  
uniformly reinforced with  $\alpha$ -phase acicular fibers 2  $\mu$  or more long with a diameter  
about one order lower. Similar precipitated  $\alpha$ -phase fibers within  $\beta$ -grains and along  
their boundaries were also observed in the alloy aged at 550 for 15 hr. In each

UDC: 669.295.5:6:0.17

Cord 1/2

ACC NR: AP6036757

$\beta$ -grain, the precipitated  $\alpha$ -fibers appeared to be oriented predominantly along the slip planes. Aging conditions had no effect on the total volume of the precipitated fibers and affected only their form and distribution. The alloy aged at 525 or 550C had a tensile strength of 161 and 170 kg/mm<sup>2</sup>, an elongation of 8.0 and 7.4%, and a reduction of area of 21.0 and 11.5%, respectively. The corresponding figures for unaged alloy were 150.7 kg/mm<sup>2</sup>, 10.0% and 17.3%. Regardless of the aging conditions, IVT-1 alloy had a relatively low notch toughness of 2 kg·m/cm<sup>2</sup>. However, the alloy aged at 525 and 550C had high resistance to crack propagation, indicating the alloy's low susceptibility to brittle failure under static loads. Therefore, IVT-1  $\beta$ -titanium alloy reinforced with precipitated  $\alpha$ -phase fibers can be recommended for structures with stress concentrators working under static loads. Orig. art. has: 2 figures and 1 table.

SUB CODE: 11/ SUBM DATE: 21Jul66/ ORIG REF: 001/ OTH REF: 004/  
ATD PRESS: 5106

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I 57500-65 EWT(m)/EWP(w)/EPF(n)-2/EWA(d)/EPR/T/EWP(t)/EWP(b)/EWA(c) Ps-4/Pu-4

APSO13155

UP/0129/65/000/0033/0035

1965/01/29/01/29/65/000/0033/0035

Geyev, N. V.; Glazunov, S. G.; Petrova, L. A.; Tarasenko, G. N.

TITLE: Aging of  $\beta$ -alloys in the Ti-Mo-Cr-Fe-Al system

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 5, 1965, 33-35, and insert facing p. 24

TOPIC TAGS: titanium alloy, chromium alloy, molybdenum alloy, aluminum alloy, metal physical property, metal hardness, metal aging

ABSTRACT: An attempt was made to find an aging treatment which gives maximum hardness and strength. A series of  $\beta$ -alloys were selected for studying structure and hardness as a function of aging temperature from 300 to 1000°C. The Ti alloys investigated varied in composition: Mo (1.6-7.9%), Cr (3.4-7.1%), Fe (3.1-6.1%) and Al. After due processing and heat treatment, the alloys were examined by metallography, and Vickers hardnesses were measured. Metallographic and hardness data are given in

L 57502-65

ACCESSION NR: AP5013155

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fig. 1 of the Enclosure. The alloys were aged, after prior annealing and treatment, for one hour at temperatures ranging from 300 to 1000°C. The hardness shows a maximum of 500-550HV depending on the alloy. From 400-800°C the hardness gradually decreases, and after 800°C an insignificant increase is noted in some alloys. The alloys have a solid solution structure when aged at 100 and 400°C. After aging at 800°C a small amount of precipitation is observed. The alloys are not hardened by aging at 1000°C. The alloys are not hardened by aging at 1000°C.

REMARKS: none

ENCL 02

DIS CODE 101 AS

101 101

L 14320-65 EPF(n)-2/ENT(m)/EWP(b)/EWP(t) Pu-4 ASD(m)-3/AFTC(p)/LJP(c)  
 JD/JG/MLK  
 ACCESSION NR: AT4048053 S/0000/64/000/000/0058/0073

AUTHOR: Ageyev, N. V.; Glazunov, S. G.; Petrova, L. A.; Tarasenko, G. N.;  
 Grankova, L. P.

TITLE: Stability of Beta alloys of the Ti-Mo-Cr-Fe-Al system

SOURCE: Soveshchaniye po metallurgii, metallovedeniyu i primeneniyu titana i yego  
 sployazov. 5th, Moscow, 1963. Metallovedeniye i titaniy (Metallurgy and titanium and  
 its alloys). Vol. 5, No. 1, 1964, pp. 1-17.

DESCRIPTORS: alloy structure, Beta alloy, alloy phase transformation, titanium  
 alloy, molybdenum alloy, chromium alloy, iron alloy, aluminum alloy

ABSTRACT: Previous studies have shown the critical concentration for the  $\beta$ -solid  
 solution of another element in titanium to be between 6 and 9%, and that the most  
 stable of these combinations are formed by rhenium, nickel, molybdenum, and tung-  
 sten. Recently, there has been much interest in multicomponent alloys with the  
 same properties, which have high strength and good versatility when hardened.  
 For these and other reasons the authors decided to study the Ti-Mo-Fe-Cr-Al sys-  
 tem in its  $\beta$ -phase and with an eye to choosing alloys for more detailed  
 experimentation. The samples chosen for experimentation had molybdenum in con-  
 centrations of wt. 2-8%, chromium from 4-9%, iron from 3-8%, titanium from 81-83%,  
 and 1/2

L 14320-65

ACCESSION NR: AT4048053

and aluminum constant at 3%. All samples but one were held at 200C for 100 hours, and that one was held at 200C for 9 hours. Two samples were also held at 300C for 100 hours; all the remaining samples disintegrated. Four of them disintegrated during the precipitation of the  $\beta$ -phase, which lasted 100 hours longer; the rest disintegrated with the precipitation of the  $\alpha$ -phase. Samples which had 2% Mo did not depend for the stability of the  $\beta$ -phase on the corresponding amount of chromium and iron with the same exception. The samples with 3% Mo disintegrated during the precipitation of the  $\beta$ -phase, while the iron content was 2.14 to 2.31; the amount of chromium in samples with 3% Mo decreased from 4.28 to 4.08, while the amount of iron increased from 3.04 to 5%. In samples with 2% Mo, each of iron and chromium was 2% more than 3% Mo did not disintegrate. To increase the stability of the  $\beta$ -alloy, and the delay in the process of disintegration is hardly worth the cost. Orig. art. has: 2 tables, 23 graphs, 11 photomicrographs, and 4 roentgenograms.

ASSOCIATION: none

SUBMITTED: 15Jul64

ENCL: 00

SUB CODE: MM

NO REF SOV: 005

OTHER: 000

Card 2/2

L 44354-66 EWT(m)/EWP(t)/ETI/EWP(k) IJP(c) JD/HW/JG

ACC NR: AP6019834

(N)

SOURCE CODE: UR/0370/66/000/001/0139/0148

AUTHOR: Ageyev, N. V. (Moscow); Glazunov, S. G. (Moscow); Petrova, L. A. (Moscow);  
Tarasenko, G. N. (Moscow); Grankova, L. P. (Moscow)

ORG: none

TITLE: Investigation of metastable  $\beta$ -alloys of the Ti-Mo-Fe-Al system

SOURCE: AN SSSR. Izvestiya. Metally, no. 1, 1966, 139-148

TOPIC TAGS: phase analysis, quaternary alloy, titanium base alloy, molybdenum, iron, aluminum, metal aging, mechanical property

ABSTRACT: This is a continuation of previous investigations (Ageyev, N. V., Rogachevskaya, Z. M. Zh. neorgan. khimii, 1959, IV, vyp. 10, 2323-2328; Ageyev, N. V., Grankova, L. P., Novik, P. K. Dokl. AN SSSR, 1962, 146, no. 2, 351-354) with the difference that it deals with Ti-Mo-Fe-Al alloys which quench to the  $\beta$ -solid solution, i.e. have an electron concentration of more than 4.20 el/at, but contain not more than 8.5% Fe and 8% Mo as well as 2.3 and 4% Al, and hence are of greater practical interest. Ingots of these alloys were melted by using a mixture of titanium sponge, Al-Mo master alloy, pure Al and armco iron. The ingots,

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UDC: 669.295

63  
62  
B

S/020/62/146/002/007/013  
B101/B144

AUTHORS: Ageyev, N. V., Corresponding Member AS USSR, Grankova, L.  
P., Novik, P. K.

TITLE: Effect of aluminum on the stability of the  $\beta$ -phase in  
titanium - molybdenum - iron alloys

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 146, no. 2, 1962, 351-354

TEXT: Titanium alloys containing 6.7-13.5% Mo, 2.2-10% Fe, and 1-3% Al were studied radiographically and metallographically and their hardness was determined in order to explain differences in the published data. Results: (1) All alloys except those containing 6.7% Mo, 2.2% Fe, and 1-3% Al form single-phase solid  $\beta$ -solutions when hardened at 700°C. . Alloys containing 6.7% Mo, 2.2% Fe, and 1-2% Al form the  $\beta$ -phase after hardening at 900°C, those containing 3% Al form it after hardening at 1000°C. (2) In alloys containing 6.7% Mo, 2.2% Fe, 1-3% Al, the  $\beta$ -phase decomposed within 15 min at 200°C. Between 200 and 300°C, the  $\omega$ -phase was formed and remained stable for 100 hrs. The hardness increased with the ageing temperature. At 400°C, a  $\beta + \omega \rightarrow \beta + \alpha$  transition took place in  
Card 1/3



Effect of aluminum on the ...

S/020/62/146/002/007/013  
B101/B144

these alloys and their hardness decreased slightly. The aluminum content of 1-3% did not affect the stability of the  $\beta$ -phase, but the hardness increased with the aluminum content. (3) In the other alloys, the  $\beta$ -phase decomposed immediately into the  $\alpha$ -phase without forming the  $\omega$ -phase. At 300°C, the  $\beta$ -phase of all alloys remained stable for 100 hrs. At 400°C, the  $\beta$ -phase of alloys containing 12% Mo, 10% Fe, and 1-3% Al did not decompose even after 144 hrs. With an aluminum content of 1%, the  $\beta$ -phase of alloys containing 9% Mo and 10% Fe decomposed within 121 hrs. With 2% Al it did so within 25 hrs, and with 3% Al within 16 hrs. In alloys containing 13.5% Mo, 6% Fe, and 1% Al, and in those containing 9% Mo, 10% Fe, and 1% Al, the  $\beta$ -phase is stable for 1 hr, at 500°C; in alloys containing 9% Mo, 10% Fe, and 2-3% Al or 7% Mo, 9% Fe, and 1-3% Al it is stable for 15 min only. (4) The  $\beta$ -phase of alloys hardened between 800 and 900°C decomposes in a similar way. (5) The  $\beta$ -phase of Ti - Mo - Fe - Al alloys is more stable than that of Ti - Mo - Fe alloys. There are 3 figures and 2 tables. The English-language references are: E. D. Kessler, M. Hansen, Trans. ASM, 46, 790 (1954); A. J. Griest, J. R. Doig, P. D. Frost, Trans. Met. Soc. AIME, 215, 4, 627 (1959).

Card 2/3

Effect of aluminum on the ...

S/020/146/002/007/013  
B101/B144

ASSOCIATION: Institut metallurgii im. A. A. Baykova (Institute of  
Metallurgy imeni A. A. Baykov)

SUBMITTED: May 12, 1962

Card 3/3

L 29192-66

EWI(m)/EWP(w)/T/EWP(t)/ETI/EWP(k)

IJP(o)

JD/HW/JG

ACC NR: AP6016583

(A)

SOURCE CODE: UR/0129/65/000/005/0012/0014

AUTHOR: Ageyev, N. V.; Glazunov, S. G.; Petrova, L. A.; Tarasenko, G. N.; Grankova, L. P.; Shelest, A. Ye.

ORG: none

TITLE: High-temperature thermomechanical treatment of  $\beta$ -alloy of the Ti-Mo-Cr-Fe-Al system

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 5, 1966, 12-14

TOPIC TAGS: thermomechanical treatment, titanium alloy, titanium beta alloy, molybdenum containing alloy, iron containing alloy, aluminum containing alloy, alloy thermomechanical treatment, alloy mechanical property, alloy structure

ABSTRACT: Forged specimens of complex titanium-base alloy containing 7%Mo, 5.5%Cr, 3%Fe, and 3%Al were subjected to high-temperature thermomechanical treatment (HTMT), rolled at 850, 950, and 1050C with a 20, 40, and 60% reduction in one pass and 80% in two passes, immediately water quenched, and then aged at 450C for 15 and 25 hr, at 500C for 5 and 10 hr, or at 525C for 5 hr. HTMT increased alloy strength without affecting ductility. For example, prior to aging the tensile strength of alloy hot rolled at 950C with a reduction of 20, 40, 60, and 80% was 96.5, 105.0, 96.7, and 99.5 kg/mm<sup>2</sup>, respectively, compared with 77.3 kg/mm<sup>2</sup> for alloy quenched from the same temperature without deformation. The corresponding figures for elongation were

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UDC: 295.621.771:621.735.61'74

L 29192-66

ACC NR: AP6016583

2

16.6, 18.4, 17.7, and 18%, respectively, compared with 16.9%. The increased strength of the alloy after HTMT is explained by strain hardening and fragmentation of the  $\beta$ -alloy grains. Aging produced a further significant increase of strength. The best combination of strength and ductility was obtained after HTMT with 60—80% reduction at 850C and aging at 500C for 10 hr or 525C for 5 hr, after which the alloy had a tensile strength of 164—177 kg/mm<sup>2</sup>, an elongation of 4.5—9.0%, and a reduction of area of 8—15%. This effect of aging was found to result from the precipitation of the finely dispersed  $\alpha$ -phase. Orig. art. has: 3 figures and 1 table. [MS]

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 008/ ATD PRESS: 5004

Card 2/2 BLQ

ACCESSION NR: AP4041145

8/0020/64/156/00470789/0791

AUTHOR: Ageyev, N. V.; Glazunov, S. G.; Petrova, L. A.; Tarasenko, G. N.;  
Grankova, L. P.

TITLE: Dislocations in the titanium - molybdenum - iron - aluminum alloys

SOURCE: AN SSSR. Doklady\*, v. 156, no. 4, 1964, 789-791, and insert facing p. 790

TOPIC TAGS: alloy dislocation, Ti Mo Fe Al, alloy, chilled alloy microstructure,  
etching, electromicroscopic study

ABSTRACT: By analyzing the structure of a quenched  $\beta$  - alloy of Ti - Mo - Fe - Al, the authors have found precipitations having the appearance of "sticks". Similar "sticks" were found earlier in quickly chilled Ti - 10% Mo alloys by T. H. Schofield et al. (Acta Metallurgica 7, no. 6, 403, 1959) who described them as regular arrays of etch holes caused by unstable groups of dislocations which are changed during cooling into a stabler net of subgrains. X-ray diffraction patterns obtained by the present authors show no presence of a new phase such as titanium hydride. It is pointed out that dislocations which are present in all metals, become apparent only under favorable conditions of etching. Electromicroscopic study of the "sticks" has actually demonstrated that they are formed by a series of little

Card 1/2

ACCESSION NR: AP4041145

holes. Orig. art. has: 4 figures.

ASSOCIATION: Institut metallurgii im A. A. Baykova (Institute of Metallurgy)

SUBMITTED: 05Feb64

ENCL: 00

SUB CODE: MM

NO REF SOV: 005

OTHER: 002

Card 2/2

SOV/81-59-9-32058

Translation from: Referativnyy zhurnal. Khimiya, 1959, Nr 9, p 354 (USSR)

AUTHORS: Gurovich, Ya.I., Grankovskiy, I.G.

TITLE: Determination of the Sintering Temperature and the Temperature Range of the Sintering of Ceramic Masses From the Change in Electric Conductivity

PERIODICAL: V sb.: Issled. i ispol'zovaniye glin. L'vov, L'vovsk. un-t, 1958, pp 403 - 404 , 830 (English summary)

ABSTRACT: An electrical method has been described for determining the sintering temperature and the temperature range of the sintering of clays and ceramic masses, based on the measurement of electric conductivity. The latter increases in proportion to the temperature rise in connection with the formation of a liquid (glass-like) phase in the materials indicated. A schematic drawing of an experimental installation is presented, by means of which the intensity of the current is measured which passes through a sample of standard dimensions (a cylinder 100 mm long and

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SOV/81-59-9-32058

Determination of the Sintering Temperature and the Temperature Range of the Sintering of Ceramic Masses From the Change in Electric Conductivity

11.2 mm in diameter). An increase in the current intensity at constant tension on the electrodes characterizes the increase in the electric conductivity of the sample. The method recommended for determining the sintering temperature and the temperature range of the sintering of ceramic masses needs no more than 1.5 hours. (1)

G. Maslennikova

Card 2/2



5(1)

SOV/32-25-4-43/71

AUTHORS:

Govorov, A. A., Grankovskiy, I. G.

TITLE:

Plant for the Differential Thermal Analysis (Ustanovka dlya differentsial'nogo termicheskogo analiza)

PERIODICAL:

Zavodskaya Laboratoriya, 1959, Vol 25, Nr 4, pp 481-482 (USSR)

ABSTRACT:

A device for thermal analyses was developed which shows some advantages as compared with the devices usually in use. It has a nickel block of a special type of construction (Fig 1). The block consists of three disks placed one above the other. The bottom disk has 7 openings in which platinum/platinum-rhodium thermoelements are introduced. The middle disk also has 7 openings which form "nests" around the thermoelements in which the substance to be tested or an inert substance is placed. The top disk is used as a lid and has 1 mm borings through which the gases liberated from the samples can escape. The block also permits analyses with only 0.2-0.3 g of substance; thermograms of two different substances can be plotted at the same time. The nickel block is placed into an electric furnace, and a uniform heating is attained by means of an autotransformer with the device KEP (Fig 2). A reflecting galvanometer M-25 is used for

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Plant for the Differential Thermal Analysis

SOV/32-25-4-43/71

recording the differential curve. The calibration of the temperature sections is done by means of known aiming points which correspond to the endothermal effects in the conversion of pure salts ( $\text{NH}_4$ ,  $\text{NO}_3$  32°, 85°, 125°,  $\text{KNO}_3$  128° and quartz 573°). There are 2 figures.

ASSOCIATION: Nauchno-issledovatel'skiy institut stroitel'nykh materialov i izdeliy Akademii stroitel'stva i arkhitektury USSR (Scientific Research Institute of Building Materials and Articles of the Academy of Building and Architecture UkrSSR)

Card 2/2

GOVOROV, A.A.; GRANKOVSKIY, I.G.

Unit for complete thermoanalysis. Zav.lab. 27 no.1:115-116 '61.

(MIRA 14:3)

1. Nauchno-issledovatel'skiy institut stroitel'nykh materialov i  
izdeliy Akademii stroitel'stva i arkhitektury USSR.

(Thermal analysis)

GRANKOVSKIY, I.G.; CHERNOGORENKO, V.B.

Apparatus for determining the viscoplastic characteristics of  
cement pastes. Zav.lab. 28 no.3:374-376 '62. (MIRA 15:4)

1. Nauchno-issledovatel'skiy institut stroitel'nykh materialov  
i izdeliy Akademii stroitel'stva i arkhitektury USSR.  
(Building materials--Testing) (Rheology)

GRANKOVSKIY, I.G.; CHERNOGORENKO, V.B.

Characteristics of cement pastes and of concentrated suspension models. Koll. zhur. 25 no.4:402-406 J1-Ag '63. (MIRA 17:2)

1. Nauchno-issledovatel'skiy institut stroitel'nykh materialov i izdeliy, Kiev.

CHERNOGORENKO, V.B.; GRANKOVSKIY, I.G.

Structure-mechanical and other properties of cement paste during its transition from the viscoplastic to the resilient-brittle state.  
Koll.zhur. 25 no.5:600-605 S-0 '63. (MIRA 16:10)

1. Nauchno-issledovatel'skiy institut stroitel'nykh materialov,  
Kiyev.

GRANKOVSKIY, I.G.

Effect of ultrasonic waves on the structural and mechanical properties of disperse water-cement systems. Koll. zhur. 26 no.5:578-582 S-O '64.

(MIRA 17:10)

1. Nauchno-issledovatel'skiy institut stroitel'nykh materialov i izdeliy, Kiyev.

CHERNOGORENKO, V.B., kand. khim. nauk; GRANKOVERKIY, I.G., inzh.

Relation of electric conductivity of cement and puddle to current  
frequency. Stroil. mat, 10 no.7:18 J1 '64 (MIRA 18:1)



OMEL'YANENKO, B.; GRANOVSKIY, M.

Study rooms and visual aids for the schools for chemical workers.  
Prof.-tekhn. obr. 21 no.9:17 S '64.

(MIRA 17:11)

GRANKOVSKIY, Vladimir Fomich; KIKLEVICH, Nikolay Antonovich;  
SIMONCHAK, Vasilii Trofimovich; FOMENKO, Dmitriy Ivanovich;  
SAPILOV, A.V., otv. red.; BELOV, V.S., red. izd-va; SABITOV, A.,  
tekhn. red.; OVSEYENKO, V.G., tekhn. red.

[Electric equipment with 660 volt rating for mines] Rudnichnoe  
elektrooborudovanie na napriazhenie 660 v. [By] V.F. Grankovskiy  
i dr. Moskva, Gosgortekhzdat, 1962. 119 p. (MIRA 15:8)  
(Mining machinery—Electric driving)

GRANOVSKIY, V.G.

Effect of elastic stresses on the parameters of solid solutions  
with ferroelectric properties. Izv. vys. ucheb. zav.; fiz. no.5:  
131-134 '64. (MIRA 17:11)

1. Rostovskiy gosudarstvennyy universitet.

KOCHO, V.S., prof., doktor tekhn. nauk; GRANKOVSKIY, V.I., inzh.; MOLCHANOV,  
Yu.D., inzh.; PLOSHCHENKO, Ye.A., inzh.

Heating open-hearth furnaces of 500 ton capacity with hot coke gas.  
Bul. TSNIIGHM no.1:11-15 '58. (MIRA 11:5)  
(Open hearth furnaces)

Grankovskiy, V.I.

AUTHORS: Kocho, V.S., Doctor of Technical Sciences, Professor, 130-58-2-6/21  
Grankovskiy, V.I., Molchanov, Yu.D. and Ploshchenko, Ye.A.

TITLE: Open-hearth Furnace Operation on High-calorific Value Low-pressure Gas (Rabota martenovskikh pechey na vysokokalor-lynom goryachem gaze nizkogo davleniya)

PERIODICAL: Metallurg, 1958, Nr 2, pp 9 - 12 (USSR).

ABSTRACT: Blast-furnace gas is normally added to coke-oven gas for firing open-hearth furnaces to improve flame quality. The low calorific value of blast-furnace gas, however, lowers the theoretical flame temperature and an investigation has been carried out by the imeni Voroshilova (imeni Voroshilov) metallurgical works together with the Kiyevskiy politekhnicheskiy institut (Kiev Polytechnical Institute) of furnace firing without the addition. The authors mention this work in which pure coke-oven gas was used with the addition of turbine air into the side of the gas port and describe the adoption of practice with reduced (halved) quantities of blast-furnace gas which followed the completion of the first part of the work. On 250 and 500-ton furnaces, the blast-furnace gas consumptions were 3 000 and 4 500 m<sup>3</sup>/hour, respectively, the coke-oven gas consumptions remaining unchanged and the specific fuel consumption being equivalent to the decrease in blast-furnace

Card1/3

Open-hearth Furnace Operation on High-calorific Value Low-pressure Gas

130-58-2-6/21

gas consumption. By increasing the port cross-sections, an equally high temperature (about 1350 °C) was obtained for gas and air checkers. The slag pockets filled less rapidly, a higher furnace temperature and increased heat flows were obtained with the new practice: measurements with VNIIT-designed probes on a 500-ton furnace are shown graphically. Three experimental heats were carried out on a 500-ton furnace without blast-furnace gas and the averages of the main operating results for this and ordinary operation are tabulated (Table 1): the authors discuss these briefly and point out that there seems to be an optimal gas pre-heat temperature. They consider the functioning of the gas checkers with pure coke-oven gas. A failure of the lining of the gas ports on a 500-ton furnace led to the combustion products losing enough heat to prevent overheating of the gas checkers and the furnace was worked on coke-oven gas continuously for 1 1/2 months. The operating results show (Table 2) mean decreases of 0.7 hours and 21.8 kg/ton for tap-to-tap time and consumption of standard fuel, respectively. The authors recommend the coke-oven gas firing of furnaces without blast-furnace gas, the cross-sectional area of the gas ports being reduced to reduce the flow of combustion products

Card 2/3

Open-hearth Furnace Operation on High-calorific Value Low-pressure  
Gas

130-58-2-6/21

by 20 - 30% and high-pressure air being supplied to the sides  
of the gas ports; blast-furnace gas should still be supplied  
during reversals.

There are 1 figure and 2 tables

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Card 3/3

1. Open hearth furnaces-Operation 2. Coal gas-Applications

KOCHO, V.S., doktor tekhn.nauk, prof.; GRANKOVSKIY, V.I., inzh.;  
PLOSHCHENKO, Ye.A., inzh. ~~GRANKOVSKIY, V.I., inzh.~~

Thermal balance of 500 and 250 t. open-hearth gas furnaces.  
Izv. vys. ucheb. zav.; chern. met. no.3:52-66 Mr '58. (MIRA 11:5)

1.Kiyevskiy politekhnicheskoy institut i Voroshilovskiy  
metallurgicheskoy zavod.

(Open-hearth furnaces)  
(Heat)



KOCHO, V.S., doktor tekhn.nauk, prof.; GRANKOVSKIY, V.I., inzh.

Investigating heat absorption and thermal efficiency of 500 and  
250-ton open-hearth furnaces. Izv. vys. ucheb. zav.; chern.met.  
no.5:65-75 My '58. (MIRA 11:7)

1.Kiyevskiy politekhnicheskii institut.  
(Open-hearth furnaces) (Heat--Radiation and absorption)

KOCHO, V.S., prof., doktor tekhn. nauk; GRANKOVSKIY, V.I., inzh.

Statistical analysis of the heat output of 500-ton and 250-ton  
capacity open-hearth furnaces. Biul. TSNIIGHM no. 10:8-15 '58.  
(MIRA 11:7)

(Open-hearth furnaces)

KOCHO, V.S., prof., doktor tekhn.nauk; GRANKOVSKIY, V.I., inzh.

~~Investigating~~ temperature conditions in 500-ton open hearth  
furnaces. Izv.vys.ucheb.zav.; chern.met. no.10:75-83 0 '58.  
(MIRA 11:12)

1. ~~Kiyevskiy~~ politekhnicheskii institut.  
(open-hearth furnaces) (Pyrometry)

KOCHO, V.S., doktor tekhn.nauk, prof.; GRANKOVSKIY, V.I., inzh.;  
PLOSHCHENKO, Ye.A., inzh.

Investigating thermal processes in open hearth furnaces operating  
with compressed air fed into the bulkheads. Izv. vys. ucheb. zav.;  
chern.metal no.1:112-116 Ja '58. (MIRA 11:5)

1.Kiyevskiy politekhnicheskii institut i Voroshilovskiy metallurgi-  
cheskiy zavod.

(Open-hearth furnaces)

GRANKOVSKIY, V. I.: Master Tech Sci (diss) -- "Investigation of the thermal operation of 250- and 500-ton open-hearth furnaces". Kiev, 1959. 20 pp (Min Higher Educ USSR, Kiev Order of Lenin Polytech Inst), 100 copies (KL, No 13, 1959, 104)

KOCHO, V.S., doktor tekhn.nauk, prof.; GRANKOVSKIY, V.I., inzh.

Changes of pressure in open-hearth furnaces vertical gas  
flues operating with compressed air. Izv.vys.ucheb.zav.;  
chern.met. 2 no.6:93-97 Je '59. (MIRA 13:1)

1. Kiyevskiy politekhnicheskoy institut. Rekomendovano kafedroy  
avtomatizatsii metallurgicheskikh protsessov i pechey Kiyevskogo  
politekhnicheskogo instituta.  
(Open-hearth furnaces)

KOCHO, V.S., doktor tekhn.nauk prof.; GRANKOVSKIY, V.I., kand.tekhn.nauk

Statistical analysis of thermal processes in a 200-ton  
open-hearth furnace. Izv.vys.ucheb.zav.; chern.met. 2  
no.7:105-110 J1 '59. (MIRA 13:2)

1. Kiyevskiy politekhnicheskii institut.  
(Open-hearth furnaces) (Pyrometry)

AUTHORS: Kocho, V.S., Doctor of Technical Sciences, SOV/133-59-9-8/31  
Sabiyeu, M.P., Grankovskiy, V.I., Ploshchenko, Ye.A.  
and Molchanov, Yu.D., engineers

TITLE: An Investigation of the Operation of a 250 Ton Open  
Hearth Furnace Fired with Coke Oven Gas

PERIODICAL: Stal', 1959, Nr 9, pp 796-802 (USSR)

ABSTRACT: Possibilities of firing open hearth furnaces with a low  
pressure hot gas of a high calorific value without  
carburization are discussed. Literature data are quoted  
indicating that autocarburization of gas can be obtained  
by preheating the gas to a temperature at which  
decomposition of methane, with the partial formation of  
higher hydrocarbons and carbon particles, takes place.  
Experience in firing a 250 ton open hearth furnace with  
preheated coke oven gas of the usual pressure instead of  
a mixture of coke oven and blast furnace gas is described.  
For this purpose the cross-sectional area of the outlets  
from dog houses was reduced from 0.45 to 0.22 m<sup>2</sup> and the  
gas port was lowered. Compressed air in an amount of  
3000 to 3500 m<sup>3</sup>/hr was introduced through the back faces  
of the dog houses. The above measures permitted

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SOV/133-59-9-8/31

An Investigation of the Operation of a 250 Ton Open Hearth Furnace  
Fired with Coke Oven Gas

increasing the velocity of the gas-air mixture from the dog house to 100 to 120 m/sec. The pressure in the gas vertical flue increased to the atmospheric pressure and at maximum thermal loads to 10 mm H<sub>2</sub>O. The temperature of the upper checkers of gas regenerators was maintained at 1200 to 1250°C. The consumption of oil remained the same as on firing with mixed gas. During the melting period, the flame was covering the bath satisfactorily but during the refining period at low thermal loads the length of the flame was insufficient. In this case, an improvement can be obtained by decreasing the coefficient of excess air to 0.9 to 1.0. Changes in the operating indices of the furnace on transfer to firing with hot coke oven gas are given in tables 1 and 2. The preliminary results obtained indicated that, in respect of productivity and fuel consumption, the furnace operation was satisfactory. Further investigation of the problem of heating open hearth furnaces with a hot low pressure gas of a high calorific value and, in

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SOV/133-59-9-8/31

An Investigation of the Operation of a 250 Ton Open Hearth  
Furnace Fired with Coke Oven Gas

particular, the development of an optimum furnace  
design is recommended. There are 6 figures, 2 tables  
and 10 references, 8 of which are Soviet and 2 English.

Card 3/3

GRANKOVSKIY, V.I.

PHASE I BOOK EXPLOITATION

SOV/3487

Kocho, Valentin Stepanovich, and Vadim Ivanovich Grankovskiy

Teplovaya rabota martenovskikh pechey (Thermal Performance of Open-Hearth Furnaces)  
Moscow, Metallurgizdat, 1960. 187 p. Errata slip inserted. 2,700 copies  
printed.

Ed.: V.N. Kornfel'd; Ed. of Publishing House: V.N. Sidorov; Tech. Ed.:  
L.V. Dobuzhinskaya.

PURPOSE: This book is intended for scientific and technical personnel at metallurgical and machine-building plants and at research and design institutes. It may also be useful to students at higher educational institutions specializing in steel metallurgy, automation of industrial metallurgical furnaces, and industrial power engineering.

COVERAGE: The book presents the results of experimental investigations of the thermal performance of large-capacity open-hearth furnaces. Heat exchange in the combustion space of furnaces and the effect of thermal conditions on heat transfer and on thermal efficiency are discussed with a view to

Card 1/5

Thermal Performance (Cont.)

SOV/3487

determining optimum parameters of the thermal regime. Distinguishing features are given and a comparison made of the thermal performance of 250- and 500-t furnaces fired with fuel blended from gases of various heating values and with hot coke gas. Considerable space is devoted to an investigation of the effect of the delivery of compressed air to the gas port ends on heat exchange in the combustion space. The following personalities (members of the Department of Steel Metallurgy and Industrial Furnaces, Kiyev Polytechnic Institute, and workers at the Alchevsk Metallurgical Plant) are mentioned as having taken part in the investigations upon which the book is based: Ye. A. Ploshchenko, Yu.D. Molchanov, V.G. Antosyak, F. Proksha, P. Ya. Vavulin, B.V. Tekhno, B.I. Kosach, P.L. Guba, and V.Ya. Lashchev. Acknowledgments are made to A.V. Kavaderov, Doctor of Technical Sciences, and V.N. Kornfel'd, Candidate of Technical Sciences, for assistance rendered in preparing the manuscript. There are 77 references: 66 Soviet, 7 English, and 4 German.

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Thermal Performance (Cont.)

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Thermal Performance (Cont.)

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Thermal Performance (Cont.)

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KOCHO, V.S.; GRANKOVSKIY, V.I.

Temperature conditions of 500-ton open-hearth furnaces operating  
with blown-in turbine air and with steam injection in the air.  
Biul. TSIICHM. no.10:34-36 '60. (MIRA 15:4)

1. Kiyevskiy politekhnicheskii institut.  
(Open-hearth furnaces)



GRANKOVSKIY, V. I.

PHASE I BOOK EXPLOITATION

85  
807/5556

Moscow. Institut stali.

Novoye v teorii i praktike proizvodstva martenovskoy stali (New [Developments] in the Theory and Practice of Open-Hearth Steelmaking) Moscow, Metallurgizdat, 1961. 439 p. (Series: Trudy Mezhvuzovskogo nauchnogo soveshchaniya) 2,150 copies printed.

Sponsoring Agency: Ministerstvo vysshego i srednego spetsial'nogo obrazovaniya RSFSR. Moskovskiy institut stali imeni I. V. Stalina.

Eds.: M. A. Glinkov, Professor, Doctor of Technical Sciences, V. V. Kondakov, Professor, Doctor of Technical Sciences, V. A. Kudrin, Docent, Candidate of Technical Sciences, G. N. Oyka, Professor, Doctor of Technical Sciences, and V. I. Yavovskiy, Professor, Doctor of Technical Sciences; Ed.: Ye. A. Borko; Ed. of Publishing House: N. D. Gromov; Tech. Ed.: A. I. Karasev.

PURPOSE: This collection of articles is intended for members of scientific institutions, faculty members of schools of higher education, engineers concerned with metallurgical processes and physical chemistry, and students specializing in these fields.

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New [Developments] in the Theory (Cont.)

SOV/5556

COVERAGE: The collection contains papers reviewing the development of open-hearth steelmaking theory and practice. The papers, written by staff members of schools of higher education, scientific research institutes, and main laboratories of metallurgical plants, were presented and discussed at the Scientific Conference of Schools of Higher Education. The following topics are considered: the kinetics and mechanism of carbon oxidation; the process of slag formation in open-hearth furnaces using in the charge either ore-lime briquets or composite flux (the product of calcining the mixture of lime with bauxite); the behavior of hydrogen in the open-hearth bath; metal desulfurization processes; the control of the open-hearth thermal melting regime and its automation; heat-engineering problems in large-capacity furnaces; aerodynamic properties of fuel gases and their flow in the furnace combustion chamber; and the improvement of high-alloy steel quality through the utilization of vacuum and natural gases. The following persons took part in the discussion of the papers at the Conference: S.I. Filippov, V.A. Kudrin, M.A. Glinkov, R.P. Nam, V.I. Yavovskiy, O.N. Oyko and Ye. V. Chelishchev (Moscow Steel Institute); Ye. A. Kazachkov and A. S. Kharitonov (Zhdanov Metallurgical Institute); N.S. Mikhaylets (Institute of Chemical Metallurgy of the Siberian Branch of the Academy of Sciences USSR); A.I. Stroganov and D. Ya. Fovolotskiy (Chelyabinsk Polytechnic Institute); P.V. Umrikhin (Ural Polytechnic Institute); I.I. Fomin (the Moscow "Serp i molot" Metallurgical Plant); V.A. Fuklev (Central Asian Polytechnic Institute).

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and M.I. Beylinov (Night School of the Dneprodzerzhinsk Metallurgical Institute).  
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[V. I. Antonenko participated in the experiments.]

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Dynamic characteristics of open-hearth furnaces according to  
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| 1ST AND 2ND COPIES                                     |  | PROCESSES AND PROPERTIES INDEX   |  |
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| <p>CP<br/>GRANNIKOV, Ya. Ya.</p>                       |  | <p>Smelting sponge iron in electric and open-hearth furnaces at a German plant. Ya. Grannikov. <i>Dones</i> 1933, No. 7, 20-42. — Sponge iron prepd. at the Hok-hemsk exptl. plant was smelted in an elec. and in an acid open-hearth furnace. Compos. of sponge: C 1.07, SiO<sub>2</sub> 0.8, Mn 0.1, P 0.01, S 0.037, Fe 75.2, Fe<sub>2</sub>O<sub>3</sub> 10.0, FeO 8.8 and CaO + Al<sub>2</sub>O<sub>3</sub> 4.1%. This sponge was used with and without desoxidizers as part of the charge in the prepn. of Cr-W-V tool-steels and plain steels. For comparison, melts were prepd. without the addn. of sponge. No tech. difficulties were encountered in the operation of the furnaces when sponge was used, and the products were of good grade. S. L. Madorsky</p> |  |
| <p>ASH-SLA METALLURGICAL LITERATURE CLASSIFICATION</p> |  | <p>1933-1934</p>   |  |

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PHASE I BOOK EXPLOITATION

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Obrabotka splavov davleniyem; sbornik statey (Pressure Treatment of Alloys; Collection of Articles) Moscow, Oborongiz, 1958. 141 p. 4,500 copies printed.

Eds.: (Title page): Korneyev, N.I., Doctor of Technical Sciences, Professor, and Skugarev, I.G., Candidate of Technical Sciences, Docent; Ed. (Inside Book): Samokhodskiy, A.I., Engineer: Ed. of Publishing House: Morozova, P.B.; Tech. Ed.: Rozhin, V.P.; Managing Ed.: Zaymovskaya, A.S., Engineer.

PURPOSE: This book is intended for engineers, technicians, and research workers in scientific research institutes. It may also be used by design engineers and other personnel interested in the shaping and working of various metals and alloys.

COVERAGE: This collection of articles deals with modern methods of forming nickel alloys, structural steels, heat resistant alloys, titanium alloys, and also aluminum and magnesium alloys. A description is given of the methods of measuring resistance of these metals to deformation. It is stated that during the last years great emphasis has been put in the USSR and abroad on production

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Pressure Treatment of Alloys (Cont.)

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of precision forged parts which can be finished by polishing and lapping only. Such methods have led to substantial savings in metal and man hours in the production of turbine blades. The 20th Congress of the Communist Party indicated the necessity of using periodically rolled stock in forging for the sake of greater economy and efficiency. Large-sized aluminum alloy extruded structural members with complex cross sections are said to have wide application in airplanes, helicopters, and diesel locomotives. Research and experimental work in this field is reported to have resulted in improved production methods and higher mechanical properties of large-sized aluminum alloy structural parts. The results of these developments, together with some experimental work in sheet metal forming, are presented and graphed in this book. A part of the book deals with the study of plasticity and resistance to deformation of the new heat-resistant titanium, molybdenum, and aluminum alloys, and their suitability for forging and press forming. The authors mention the names of senior technicians P.I. Potanov, R.N. Yakovleva, and laboratory technicians V.B. Emelyanov, and A.V. Sokolov, who assisted in the experimental work.

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